



University of Nebraska at Omaha
DigitalCommons@UNO

Theses/Capstones/Creative Projects

University Honors Program

5-2020

Perspective Driven Behavior: The Effects of Classroom Climate on a Student's Personality and Willingness to Communicate

Nicholas Weber
npweber@unomaha.edu

Follow this and additional works at: https://digitalcommons.unomaha.edu/university_honors_program



Part of the [Industrial and Organizational Psychology Commons](#), and the [Personality and Social Contexts Commons](#)

Recommended Citation

Weber, Nicholas, "Perspective Driven Behavior: The Effects of Classroom Climate on a Student's Personality and Willingness to Communicate" (2020). *Theses/Capstones/Creative Projects*. 99.
https://digitalcommons.unomaha.edu/university_honors_program/99

This Dissertation/Thesis is brought to you for free and open access by the University Honors Program at DigitalCommons@UNO. It has been accepted for inclusion in Theses/Capstones/Creative Projects by an authorized administrator of DigitalCommons@UNO. For more information, please contact unodigitalcommons@unomaha.edu.



Perspective Driven Behavior:
The Effect of Classroom Climate on a Student's Personality and Willingness to Communicate

Nicholas Weber
The University of Nebraska at Omaha

Abstract

Modern students are experiencing problems novel to the college environment. Much emphasis has been placed on learning in the classroom and the interactions with other students and professors, but this research has neglected features intrinsic to the student in question. The current study evaluates the student's communication climate (or Connected Communication Climate Inventory (CCCI) score) within their classrooms as it relates to the relationship between key personality traits (i.e. Extraversion, Intellect/ Imagination, and Neuroticism) and their willingness to communicate (WTC) in those settings. College students have been given assessments to evaluate the prevalence of distinct personality traits and their relationships with distinct classroom contribution patterns. This has been compared to their perceived comfortability (i.e. CCCI) in order to understand whether patterns of perception can attenuate or override personality traits. Ultimately, the impact of this research works to measure the impact of a student's characteristics on their perception of the interpersonal interactions and relationships they hold within their courses.

Keywords: Intellect/Imagination, Extraversion, Neuroticism, communication climate, willingness to communicate

The Effect of Classroom Climate on Student Personality and One's Willingness to Communicate

Developing critical reasoning skills and building social connections are among the modern requirements facing those entering the workforce. In college, gaining exposure to multiple perspectives is key in preparing students for this emergent society (Bowman, 2010; Milem, 2003). However, the methodology by which these goals are accomplished is fraught with increasing variability. Current research has focused largely on the environmental factors that students wrestle with including class size (Chapman & Ludow, 2010), attendance (Crede, Roch, & Kieszczynka, 2010), instructor behaviors and perceptions (Schrodt, 2003), and other features impacting student participation in classrooms (Solinger, 2015; Hill, 2011; Vedel, Thomsen, & Larsen, 2015; Taylor, 2002; Sharma, 2015; Faust & Courtenay, 2002; Case, K.A., 2011). More individual differences impacting students' willingness to communicate (Allen, Long, O'Mara, Judd, 2008; Cao & Philp, 2006) have also been evaluated. What seems to be sorely lacking from the literature is a comparison between these intrinsic characteristics and how they impact the student's perception. Such research is needed to combine the elements involved with student contribution in classrooms and develop a coherent story.

It is paramount that research account for individual differences in thought and behavior, especially for students beginning college, as this is a time of great cognitive and social development (Bowman, 2010). Such a measure would seem to be predictive of such influences (e.g. cognitive, behavioral, social, etc.) not only on their college performance (Hill, 2008), but in their approach to interpersonal interactions within the classroom environment. However, those differences are not the only influential feature present. The climate of campuses, classes, and living spaces all exhibit variance in the way a student learns and behaves, as does the way in which that student interprets them (Bowman, 2010; Dwyer, Bingham, Carlson, Prisbell, Cruz,

and Fus, 2004). The current study will focus on the effects that different personality variables have on classroom contribution (i.e. WTC), and to what degree these effects vary depending on the nature of a student's perceived communication climate. Once these constructs have been fully defined, the necessity of accounting for the cognitive and social factors of college students should appear as obvious despite their neglect within the literature.

Regarding the structure of this study, three personality traits (e.g. Extraversion, Neuroticism, & Intellect/ Imagination) will serve as the input variables in question and their relationship with WTC will be individually defined. Subsequently, the nature of these relationships will be examined and result in formal hypotheses. After discussing both the input and output variables, a definition will be provided for communication climate and its relationship with the input and output variables will serve as the successive moderation hypotheses. Incorporating communication climate will help to provide insight into people's senses of comfort in their ability to engage in helpful, comfortable classroom discourse. The practical benefits that would arise from the relationship of these personality traits with WTC in classrooms, and with communication climate between students would demonstrate the power of positive student perception and its potential to override negative effects of dominant personality traits. This will provide a viable template for professors to integrate in their course-planning and for students to learn about how they learn within the college atmosphere.

Personality

In general, personality refers to the tendency to act and think in a certain way. This study will utilize the unique amalgamation of personality traits as measured by the Mini-IPIP (Donnellan, Oswald, Baird, and Lucas, 2006), as they seem to influence an individual's propensity or willingness to contribute to classroom discussion while serving as some of the

more basic features that impact behavior. This measure has adapted the original, better known Big Five structuring of personality which differed only in quantity of elements (Donnellan et al., 2006). Personality traits are features of an individual seen as largely consistent over longer periods of time (McCrae and Costa, 1999), but this does not mean they cannot change. Over time, influences from the environment and normal development seem to change the dominance of personality traits (McCrae and Costa, 1999). These traits that do appear most pronounced in people are those they are more likely to act accordance with (Stoldz & Vaillant, 1999). These traits include *Extraversion*, *Neuroticism*, *Conscientiousness*, *Intellect/ Imagination*, and *Agreeableness*, and are all encompassing measures of personality used by the DSM-5 and related documents. In depicting common college situations for suitable examples, the presiding traits are efficiently demonstrated:

- (1) Extraversion: This trait seems to hold the most popularity of all personality scores. It includes appraisals of high assertiveness, excitement seeking, talking (Stoldz & Vaillant, 1999), and being the “...life of the party (Donnellan et al., 2006)” A student high in *Extraversion* may eagerly jump at the chance to answer questions and offer commentary without cues in order to engage with the class.
- (2) Neuroticism: This trait has adopted a culturally understood negative connotation (at least in the US) (Stolds & Vaillant, 1999). This is largely due to its notable feature, negatively self-directed thought. Beneficially, this leads to a heightened level of creativity (Perkins, Arnone, Smallwood, & Mobbs, 2015). Thus, a student of this caliper may exhibit an anxious affect but will likely provide novel ideas.
- (3) Conscientiousness: This trait is understood as the organization trait, characterized by the basic tendencies of achievement striving and a strong sense of purpose

(McCrae & Costa, 1999). This student may have color-coordinated notes, and diagnostic criteria for determining weekend plans.

- (4) Intellect/ Imagination: This trait reflects an excitement regarding novelty of intelligence, experience, and sensation/perception (DeYoung, 2014). A student high in intellect is not *necessarily* intelligent, but will be eager to learn new information, thus increasing the likelihood of frequently asking questions during class.
- (5) Agreeableness: Conflict is actively avoided by those high in this trait (McCrae & Costa, 1999). When answering questions, they will likely cater their responses in a friendly manner to all sides of an issue, though they will not exhibit any relationship with response frequency.

While all personality traits purportedly impact one's WTC or evaluation of their classroom setting, it is not certain why all of them should show significance. Agreeableness and conscientiousness were left out of the analysis as they arguably have no significant effect on any relationship with the output or moderating variable. An individual's high Agreeableness may hold some small relation with their willingness to communicate, but it seems that this would depend on the detected level of controversy far more than communication climate. Similarly, conscientiousness may include higher levels of WTC such that an individual characterized by their organizational habits may hold clearer lines of thought, but this need not be the case. Moreover, when compared to communication climate, conscientiousness would seem to have no impact. This is because we find that both organized and unorganized individuals contribute to group communication (Soldz and Vaillant, 1999). For these reasons, the current study will specifically conduct research on Extraversion, Intellect/ Imagination, and Neuroticism.

Openness, one of the originally posed personality traits by the architects of the Big Five, has been reformatted to the personality trait of Intellect/ Imagination so that researchers can zoom in on the conceptual notion of what it is they want to measure. In other words, measurements for openness seemed to some, not inclusive enough, or lacking a necessary construct. Theorists involved in this debate posit that openness and intellect are two *facets* or subordinate concepts held underneath a more general personality trait, *Openness/Intellect* (DeYoung, 2014). Others hold that Openness is enough as it gives a coherent understanding of novelty, a key factor to any rendition of the trait (Schwaba, Luhmann, Denissen, Chung, and Bleidorn, 2017). For this paper, Donnellan et al. (2006) name the measure *Intellect/Imagination*, but do not necessarily deny the mentioning of *Openness*. Rather, they decide on the name for the sake of clarity and denote *Openness*, while citing other authors as using these terms interchangeably (Donnellan et al., 2006). Using the same measure as Donnellan et al. (2006), this paper will take the same stance on the debate between Openness and Intellect/Imagination, namely that if a substantial difference exists, it supersedes the scope of this paper.

Willingness To Communicate:

The construct, willingness to communicate (WTC), is a measurement originally designed to predict the tendencies of individuals to talk in multiple scenarios including large groups of strangers, corporate meetings, and gatherings of friends (McCroskey, 1992). Rather than focusing on actual communication, WTC looks at how willing a person is to communicate. Consider a classroom where the instructor only leaves a small amount of time at the end of the period to ask questions. While many people may be *willing* to articulate their thoughts, only some will communicate them. Behavioral studies are often limited to observing how often people communicate, but WTC offers the sensitivity to look at how comfortable one would be in

communicating during a given situation. The measure used in this study presents individuals with different scenarios in which they may appraise comfort with communication (Cao & Philp, 2006). This is done psychometrically by varying the number of individuals present across items or the closeness of the relationship an individual has with those involved (e.g. acquaintances, friends, or strangers). For example, Cao and Philp (2006) used this construct to analyze classroom discourse of English language learners. This was devised because there appeared to be an increased discomfort in engaging using a secondary language. For this study, Cao and Philp's (2006) more developed model has been repurposed with the goal of focusing on the classroom setting rather than gaining a holistic view (i.e. communication in all situations, including those not experienced during class) on an individual's discussion rating. With communication apprehension, or the fear and anxiety experienced when engaging in discourse, being especially pronounced in college classroom settings (Hill, 2008), evaluation of communication features is in desperate need. When paired with other observational measures, WTC can analyze the perceived discomfort when one is engaging in college-level discussions on material that they are not familiar with (Cao & Philp, 2006). In addition, WTC offers a reliable measure for communication tendencies even when recorded via self-report (McCroskey, 1999).

A clear connection can be drawn between distinct personality traits and one's willingness to communicate. Prior studies have developed a line between these traits and the communication competencies by discovering factors that influence assertiveness (Sims, 2016). However, because this focuses on the actual communication of individuals rather than their willingness to communicate, it provides an incomplete picture. The input variables of this study are divided into three subcategories, the first of which is Intellect/ Imagination. Due to the characteristic openness and excitement to novel concepts and creativity, it is likely that individuals high with

this characteristic will be more apt to communicate in college courses which require, in classroom discourse, students to grapple with complex ideas. When applied to WTC, the first hypothesis purports:

H1: Intellect will have a significant, positive relationship with WTC.

The second input variable, Extraversion, is defined as a desire to communicate with others and have an assertive presence. These characteristics mirror those of individuals who score high in WTC (McCroskey, 1992). Regardless of Extraversion's efficacy in team studies or conflict resolution, communication (both verbal and nonverbal) is a significant, defining characteristic (Medina and Srivastava, 2016; Topi, Valacich, and Rao, 2002). It would be conceptually odd to have a person high in one personality trait that exemplifies communication, and simultaneously be unwilling to communicate. In other words, Extraversion reflects a strong similarity with the output variable, WTC such that the current study hypothesizes:

H2: Extraversion will have a significant, positive relationship with WTC.

Lastly, Neuroticism, depicted by anxious affect and a persistent self-generated thought (Perkins et al., 2015), is thought to lessen the probability of student contribution in classroom discourse. This is because self-generated thought occurs by picturing what a person has done, what they will do, and what consequences have occurred or will occur in virtue of those actions. An individual high in Neuroticism would be captivated by both the prospect of communication and the impact of the subject matter contained in their communication. So much so, that their willingness to communicate would be characteristically low:

H3: Neuroticism will have a significant, negative relationship with WTC.

Communication Climate

Perhaps the most steadfast method of understanding a student's ability to comprehend or critique information is to observe how they use language to discuss it within a classroom environment. The intrinsic personality features and WTC seem to lay the structure for this, but an account for the interpersonal perceptions each student holds towards their peers may give insight to the overall understanding of classroom contribution. The reasoning behind how individuals act, think, and behave is impacted by their environment, and during class, one's environment is largely determined by their peers (Dwyer et al., 2004). What is important for college students is that they learn to think critically, and question the beliefs and decisions made by themselves or others using objective analysis.

Classroom discussion, arguably the most important feature facilitating these skills, serves as the crux of my study and thus requires extensive clarification of its multiple factors. This study uses the influences of one's communication climate depicted by the perceived connectivity and comfort with their peers. Dwyer et al. (2004) describe communication climate, as it pertains to college students, as "student-to-student perceptions of a supportive and cooperative communication environment in the classroom (p.267)." This picture of a supportive environment, when fueled by interpersonal bonds, presents an aspect of the student distinct from personality. While it may have an impact, unless the student stays with the same group over long periods of time and meets for long durations (not quite characteristic of typical college classes), then the environmental effect of whatever classroom the student finds themselves in will be temporary and thus, external. Dwyer et al. (2004) devised a measure that adapted original manifestations of communication climate (i.e. those applied to organizations and members other than one's peers) into one that focused on inter-student relations. This was referred to as the Connected Classroom Climate Inventory (CCCI) and was found to delineate the connection

between students based on depth or intimacy (i.e. distinction between a shared concern for one another as opposed to small talk or showing respect).

With respect to the relationship shared between personality traits and WTC, communication climate or, in this study, CCCI will serve to evaluate the surface level social impact on student behavior (Dwyer, 2004). For example, Intellect/ Imagination and WTC are hypothesized as having a positive relationship. The question with this trait, as well as the others, is the degree of change which will occur with the addition of the moderating variable, CCCI. In other words, how are students with low levels of Intellect/ Imagination going to contribute in the classroom if they perceive it and their cohorts to be comforting? It is likely that in situations where individuals exhibit high levels of Intellect/ Imagination, high scores of CCCI will either not significantly change the positive impact on WTC or increase it. If low levels of Intellect/ Imagination are to be thought of as causing lower levels of WTC, the presence of a high score in CCCI should increase that low level of WTC by providing a high level of comfortability:

H4: CCCI will moderate the relationship between Intellect/ Imagination and WTC

such that the positive relationship will be attenuated (*Figure 1*).

Concerning Extraversion, the same trend is likely to occur, but for slightly different reasons. In defining Extraversion, it is nearly impossible to neglect the characteristic eagerness in talking or communicating with others. This facet of the trait is nearly equivalent to the outcome variable, WTC; however, it is not the *only* facet of Extraversion. Costa and McCrae (1999) list "...a preference for companionship and social stimulation." as defining features of Extraversion alongside developing numerous friendships and engaging in team sports. Soldz and Vaillant (1999) listed "warmth" and "excitement seeking" in their depiction of Extraversion. A more recent meta-analysis wrote:

“Our synthesis provides an illustration across variables, showing that Extraversion is characterized by fluency in nonverbal (emotional expressiveness) and verbal communication (assessment center ratings of oral presentation), as well as attention and sensitivity to others (individualized consideration), all of which contribute to mutually rewarding interactions (Wilmot, Wanberg, Kammeyer- Mueller, & Ones, 2019; p.14).”

Here, Wilmot et al. (2019) give reason to believe that one can hold a high level of Extraversion sans a tendency towards “verbal communication.” WTC, while being distinct from actual communication, may share this same relationship such that it is enough for high Extraversion, but not necessary. If this is the case, then it would seem this input variable and the output variable are indeed distinguishable. Yet, where low levels of Extraversion are concerned (and low scores of WTC are expected), the impact of CCCI will increase the level of WTC. Thus, upon the introduction of the moderating variable, CCCI, it is likely the same pattern as with Intellect/ Imagination will occur:

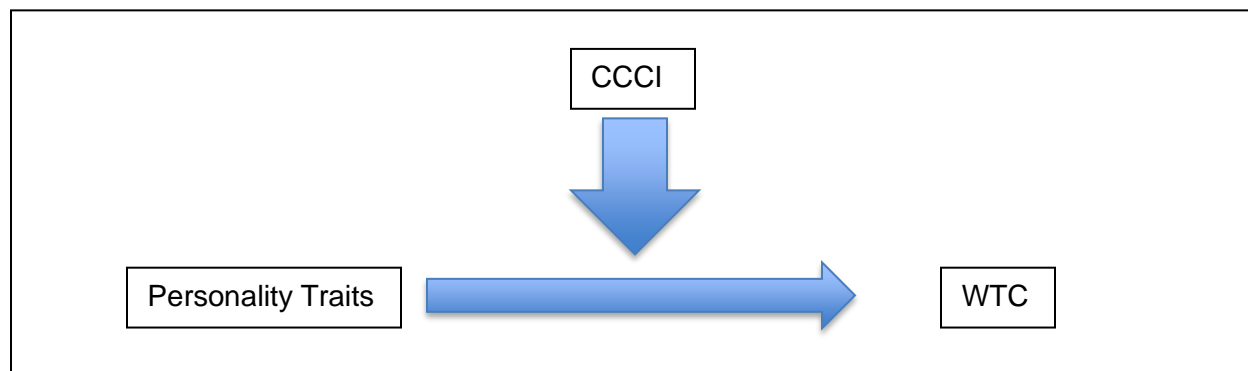
H5: CCCI will moderate the relationship between Extraversion and WTC such that the positive relationship will be attenuated in a positive trend (*Figure 1*).

Much like its conceptual relationship to Extraversion, the impact of CCCI on Neuroticism seems to show the inverse relationship (Robison, Gath, & Unsworth, 2017). The high levels of Neuroticism, leading to a low WTC, would be overridden by the external impact of high CCCI. In other words, individuals who exhibit a low score of WTC, presumably due to their high Neuroticism, will experience great comfort and acceptance from a high CCCI. This will lead to a heightened score of WTC. Contrastingly, those already low in Neuroticism will either see an

increase in their WTC score or no change at all, as their Neuroticism level is already related to high WTC:

H6: Communication climate will moderate the relationship between Neuroticism and WTC such that the negative relationship will be attenuated (*Figure 1*).

Figure 1:
Moderation Model



Method

Preliminary data was collected ($n = 40$) to conduct a power analysis. Upon review of the variables, the relationship between neuroticism and WTC showed a standard deviation of 9.8. In order to decrease the original confidence interval width from 6 to 1.75, it was determined that a minimum sample size of 500 participants would be needed. For this study, a survey was crafted using Qualtrics and then uploaded to mTurk where 760 participants from across the United States were asked close-ended questions to evaluate their demographic information (see Appendix 1), and others on a 7 point Likert scale to evaluate constructs of interest. Of the 760 participants, there were 570 viable responses¹ of which 60.2% (226) were females and 39.6% (344) were females. Participants' ages ranged between 18 and 74 with the mean age of 30.5 years. 65.7% (375) of participants were currently enrolled in courses, the specifics of which are

¹ 250 responses were rejected from final analysis due to incomplete surveys, failure to meet *attention check* requirements (i.e. explicitly told to answer B, but provided a different answer).

denoted in Table 1. To further control for differences of education, the highest completed level of education was recorded from each participant (e.g. High school/ GED, Associate Degree, Ph.D.) (Appendix 1). In addition, the *years since last graduation* was measured in order to control for the differences between current and past students. The goal of this survey is further reflected by *Figure 1*.

TABLE 1:
Current Student Stats.

Variable(s)	Frequency (N)	Percent	Valid Percent	Cumulative Percent
Total	359	62.9	100	
Undergraduate	197	34.5	54.9	54.9
Graduate	162	28.4	45.1	100.0
1 st Year	79	13.8	22.0	22.0
2 nd Year	66	11.6	18.4	40.4
3 rd Year	73	12.8	20.3	60.7
4 th Year	65	11.4	18.1	78.8
5 th Year	76	13.3	21.2	100.0

Measures:

Personality variables were analyzed from a measurement developed by Donnellan et al. (2006). This measure consists of twelve items (see Appendix 1), four per personality trait. According to these researchers, this measure exhibits no significant difference in reliability or validity to the original NEO-Five-Factor exam, only in the number of items (Donnellan et al., 2006). Intellect/ Imagination was shown to have a Cronbach's alpha score of .71, Extraversion a Cronbach's alpha score of .79, and Neuroticism a Cronbach's alpha score of .67. The questions (e.g. "I am the life of the party.") were evaluated on a seven-point Likert scale (1-Strongly Disagree to 7-Strongly Agree).

The output variable (i.e. WTC) is analyzed from a measurement developed by Cao and Philp (2006) and consists of 25 questions (see Appendix 1). Thirteen of these questions were removed from the analysis because they expanded beyond the scope of classroom specific analysis (e.g. How likely are you to talk with a garbage collector?). This measure for WTC was shown to have a Cronbach's alpha score of .89. The items (e.g. "Present your own opinions in class.") will also be evaluated on a seven-point Likert scale (1-Extremely Unlikely to 7-Extremely Likely).

The moderation variable (i.e. Communication Climate) is analyzed from the CCCI measurement developed by Dwyer et al. (2004) and consists of 18 questions (Appendix 1). Due to the nature of this research, participants will be cued to think of a learning environment when addressing these items. This measure was shown to have a Cronbach's alpha score of .93. The items (e.g. "The students in my class are friendly to one another.") will be evaluated, as the other measurements, on a seven-point Likert scale (1-Strongly Disagree to 7-Strongly Agree).

Results:

Each variable was primarily analyzed to determine if they measured an independent construct. As anticipated, Extraversion and WTC were highly correlated (.580), but not to the extent that they pick out the same construct (Table 2). Interestingly, CCCI and WTC were highly correlated as well (.447). This indicates that both variables independently had a significant relationship with the output variable. The remaining constructs, through Pearson Correlations, were found to measure data of independent significance from one another. Mean scores of each construct are reflected by *Table 3*, all showing normal distribution.

**TABLE 2:
Constructs**

		WTC	Neuroticism	Extraversion	Intellect/ Imagination	CCCI
WTC	Pearson Correlation	1	-.261**	.580**	.159**	.447**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	570	570	570	570	570
Neuroticism	Pearson Correlation	-.261**	1	-.120**	-.153**	-.157**
	Sig. (2-tailed)	.000		.004	.000	.000
	N	570	570	570	570	570
Extraversion	Pearson Correlation	.580**	-.120**	1	.066	.269**
	Sig. (2-tailed)	.000	.004		.117	.000
	N	570	570	570	570	570
Intellect/ Imagination	Pearson Correlation	.159**	-.153**	.066	1	.181**
	Sig. (2-tailed)	.000	.000	.117		.000
	N	570	570	570	570	570
CCCI	Pearson Correlation	.447**	-.157**	.269**	.181**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	570	570	570	570	570

**TABLE 3:
Construct Scores**

		CCCI	WTC	Intellect/ Imagination	Extraversion	Neuroticism
N	Valid	570	570	570	570	570
	Missing	1	1	1	1	1
Mean		67.25	3.56117	14.74	11.41	11.11
Std. Error of Mean		.490	.03326	.135	.162	.145
Mode		70	4.00000	16	12	12
Std. Deviation		11.706	.79411	3.213	3.866	3.472
Range		72	3.91666	14	16	16
Minimum		18	1.08333	6	4	4
Maximum		90	5.00000	20	20	20

A correlation test was run to evaluate H1, in which Intellect/Imagination was compared to WTC ($p = .0174$) and found to be supported (*Table 4*). In other words, the relationship was

significant and held a positive trend ($Coeff. = .1140$). Regardless of the covariates included in the Process v.34 moderated regression analysis (e.g. *YearsSinceGrad.*, *Age*, *Gender*, etc.), the relationship between the input and output variable showed little difference and remained significant and positive ($p = .0263$). Higher intrinsic Intellect/Imagination levels seem to occur with high WTC levels.

TABLE 4:
Model 1 [(Intellect_x_WTC) _x_CCCI]

Variable(s)	Coefficient	SE	t	p
constant	-.5620	.7635	-.7361	.4620
Intellect/Imagination	.1140	.0478	2.3852	.0174
CCCI	.0505	.0110	4.6155	.0000
Int_1 ²	-.0014	.0007	-2.0028	.0457
Student	.1485	.0855	1.7376	.0828
YearsSinceGrad.	-.0142	.0065	-2.1981	.0284
Age	.0089	.0033	2.7049	.0070
Gender	-.0009	.0610	-.0146	.9883

The correlation analysis between Extraversion and WTC was undergone to test H2. The result was positive ($Coeff. = .0837$) and significant ($p = .0105$) as reflected in *Table 5*. Like Intellect/Imagination, the relationship between Extraversion and WTC remains positive ($Coeff. = .1013$) and significant ($p = .0000$) when all covariates are removed from analysis. Higher levels of Extraversion thus tend to result in participants holding a higher willingness to communicate.

² *Int_1* refers to the interaction between the moderator variable and the input-output variable relationship and thus serves as the most important variable when determining moderator impact.

TABLE 5:
Model 2 [(Extraversion_x_WTC) _x_CCCI]

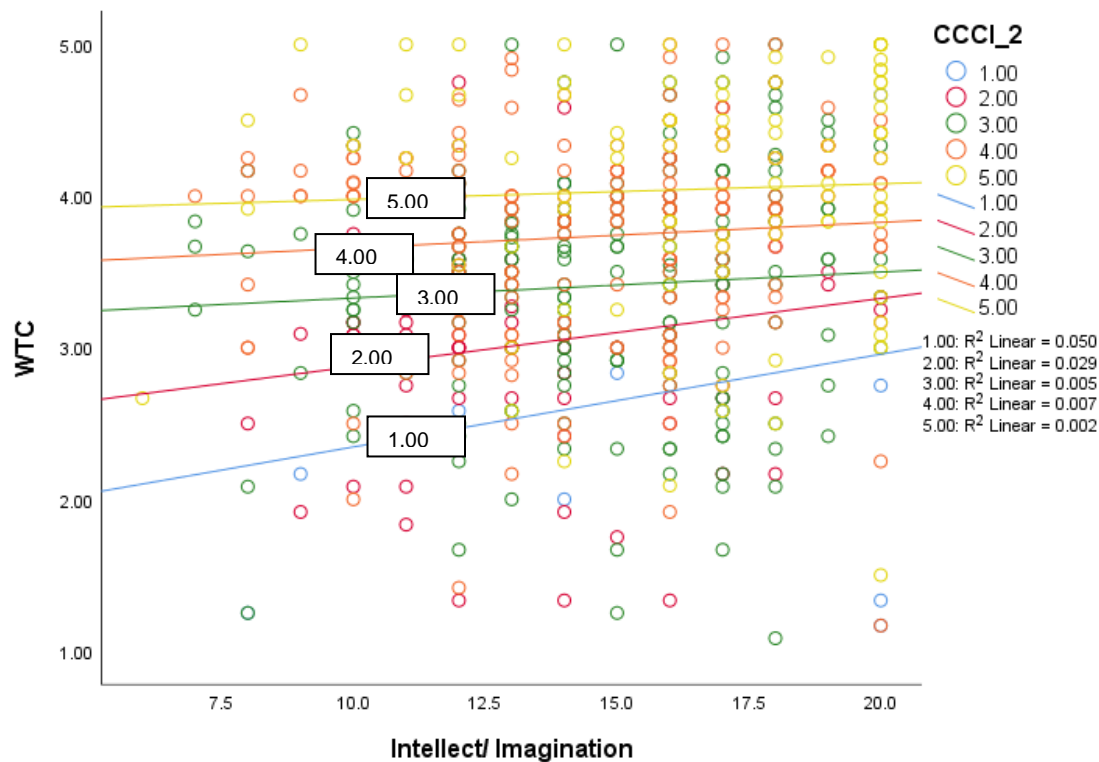
Variable(s)	Coefficient	SE	t	p
constant	.6899	.3941	1.7503	.0806
Extraversion	.0837	.0326	2.5667	.0105
CCCI	.0173	.0054	3.1788	.0016
Int_1	.0003	.0005	.6472	.5178
Student	.1022	.0729	1.4024	.1614
YearsSinceGrad.	-.0144	.0055	-2.6118	.0092
Age	.0099	.0029	3.4336	.0006
Gender	-.0034	.0511	-.0667	.9468

The correlation analysis to determine whether H3 was supported or not evaluated the relationship between Neuroticism and WTC. This relationship was found to be negative (*Coeff.* = -.0442) and significant ($p = .0000$), and thus supportive of H3 (*Table 6*). The absence of covariates does not impact the negativity (*Coeff.* = -.0439) or significance ($p = .0000$) of the relationship.

TABLE 6:
Model 3 [(Neuroticism_x_WTC) _x_CCCI]

Variable(s)	Coefficient	SE	t	p
constant	3.1249	.1761	17.7404	.0000
Neuroticism	-.0442	.0089	-4.9701	.0000
CCCI	.0281	.0025	11.1573	.0000
Int_1	.0013	.0006	2.2406	.0254
Student	.1289	.0837	1.5400	.1241
YearsSinceGrad.	-.0149	.0063	-2.3570	.0188
Age	.0070	.0033	2.1288	.0337
Gender	.0690	.0611	1.1294	.2592

FIGURE 2:
Model 1 [(Intellect_x_WTC) _x_CCCI]



A moderated regression analysis, via Process v.34 (Hayes, 2020), was run to test the subsequent hypotheses. Table 3 exhibits the impact of both CCCI on the output variable, WTC ($p = .0000$), as well as the interaction between CCCI and the relationship between Intellect/Imagination and WTC. This value is both significant ($p = .0457$) and holds a slight negative tendency ($Coeff. = -.0014$). Interestingly, the covariate, *Student Status*, is necessary for the significance such that when it is removed, the interaction variable has a value of $p = .0516$.

H4 is supported such that the impact of CCCI largely attenuates the positive relationship between Intellect/Intelligence and WTC (Figure 2). However, this attenuation occurs contingent upon the level of CCCI. In other words, when there are high levels of CCCI ($CCCI = 11.7063$), the impact of Intellect/Imagination is more significant regarding WTC ($p = .6637$). When there are low levels of CCCI ($CCCI = -11.7063$), its impact on WTC is more significant than

Intellect/Imagination ($p = .0040$). This trend seems to carry on into moderate levels of CCCI ($CCCI = 0.00$) ($p = .0263$).

Table 4 addresses the impact of CCCI on the relationship between Extraversion and WTC. The effect of the interaction variable (Extraversion + CCCI) was found to be insignificant ($p = .6014$) and H5 was not supported. The presence of covariates did not impact this finding. However, as stated earlier, these constructs held similar relationships with WTC, and so resulted in independent significant positive relationships with the output variable. The direct relationship between Extraversion and WTC has been mentioned ($p = .0105$), but the relationship between CCCI and WTC was slightly more significant ($p = .0016$). The increasing levels of *CCCI_3* in *Figure 3* reflect the increase in scores and thus the consistency in slope of each line depict the lack of significance.

The impact of the interaction variable of CCCI and Neuroticism on WTC was found to be significant ($p = .0254$), such that H6 was indeed supported (*Table 6*). As shown by *Figure 4*, the increase in CCCI impact attenuates the negative relationship between the input and output variables. However, the impact of Neuroticism and CCCI were dependent on the level of CCCI. Compared to Intellect/Imagination, the level of CCCI necessary for Neuroticism to have a greater impact on WTC was higher at $CCCI = 14.0468$.

FIGURE 3:
Model 2 [(Extraversion_x_WTC) _x_CCCI]

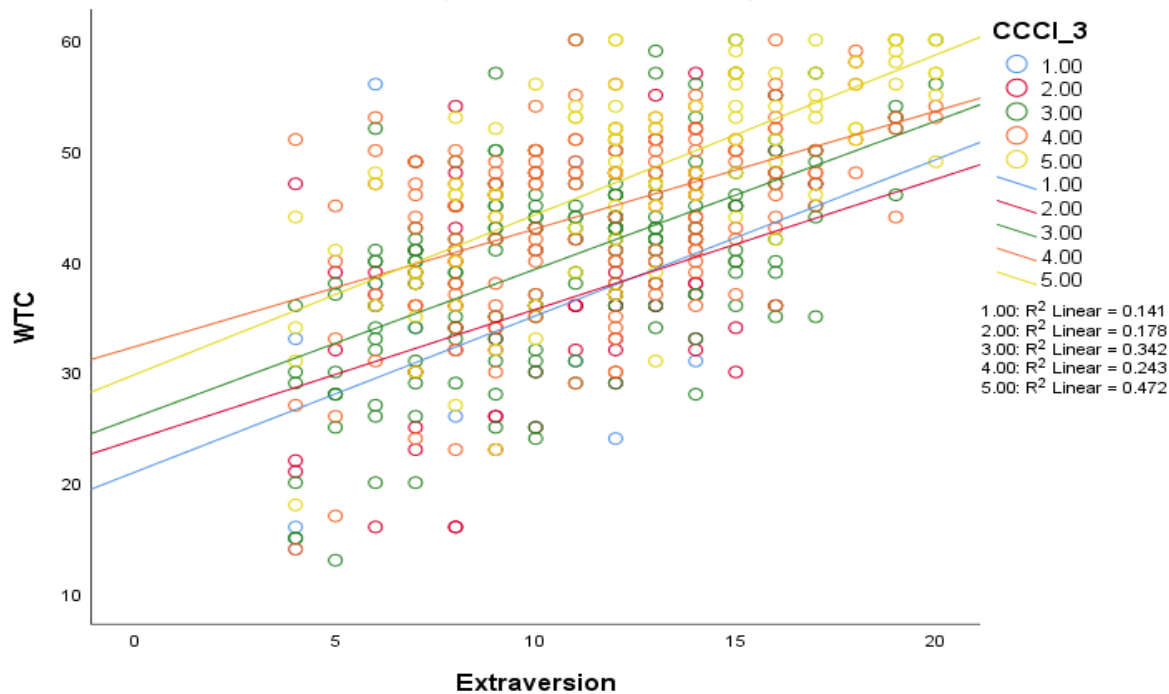
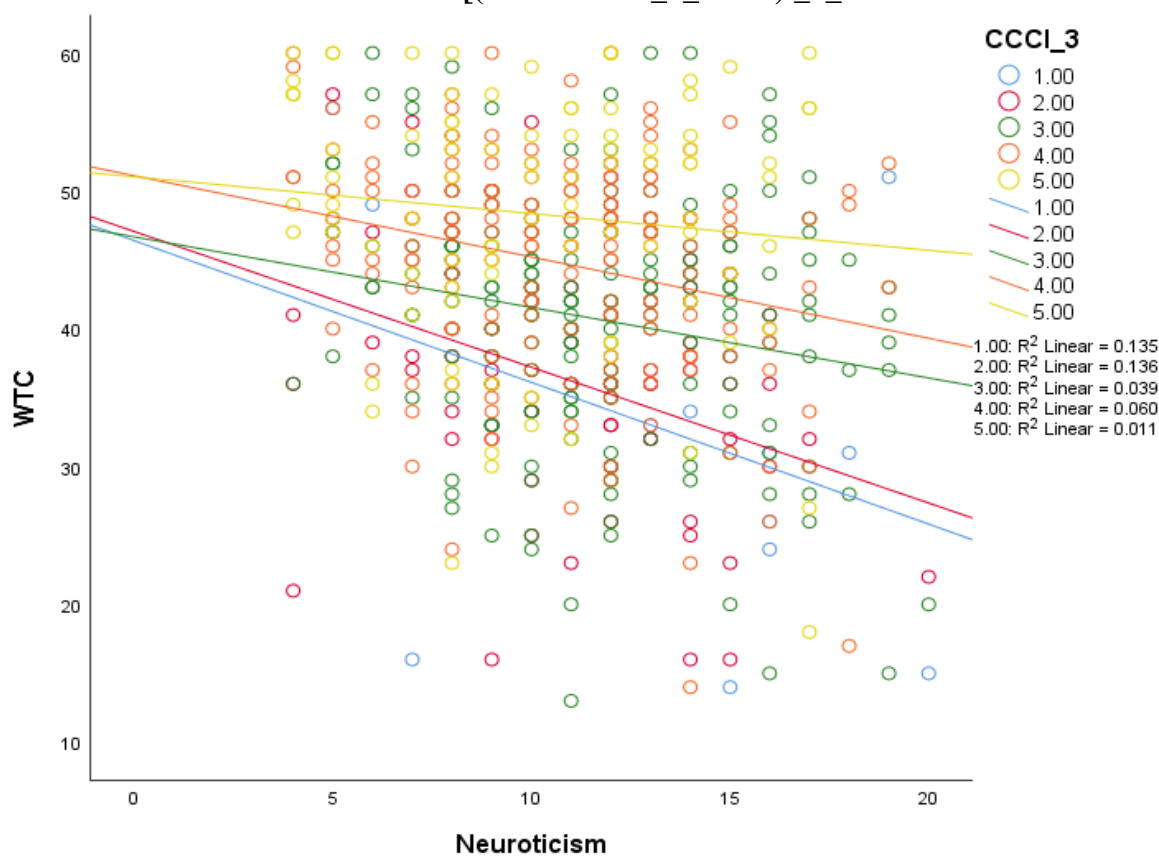


FIGURE 4: Model 3 [(Neuroticism_x_WTC) _x_CCCI]



Discussion:

The findings regarding H1 and H3 show that significant, positive relationships exist between the personality traits of Intellect/Imagination and Extraversion, and one's WTC. Neuroticism, depicted in H3, shows a significant, negative relationship with one's WTC. Because personality traits are intrinsic factors that play a role in determining our behavior, cognition, and perception, it is not surprising they hold significant control in our willingness to communicate during any situation.

Interestingly, CCCI was found to hold an independent significant role in determining WTC in every model, but with respect to Extraversion, this was its only role. Instead of a moderation model (*Figure 1*), CCCI would act like Extraversion in that both variables would point directly at the output. In other words, when paired with Extraversion, CCCI takes on the persona of an input variable. H4 was unique in that its significance was contingent on the covariate, *Student Status*. If controlling for individuals currently in classes had a significant impact, it would seem groups in courses are more aware of the climate of their classrooms and thus show the effect. Those outside of the student role presumably approximate different representations of classroom climate as their template would be detached from reality and heavily dependent on memories from long ago.

The findings for both H4 and H6 showed a significant moderation. While certain levels of CCCI did, in fact, attenuate the relationships between personality traits and one's willingness to communicate, as CCCI levels increased their impact on WTC decreased. Imagine a classroom with poor communication climate. One possible explanation is that students with high levels of Intellect/Imagination or Neuroticism are more focused on the environment and what behaviors and thoughts they must engage in to yield the best possible situation. The impact of this environmentally altered perception (i.e. CCCI) supersedes the need for participants to look inside

themselves. The power or main influence on WTC is then taken away from their personality traits and left to the context of their classroom. As the level of communication climate improves, students begin to feel more comfortable. This comfort causes them to detract their attention from the environment, thus yielding more influence to personality traits.

As stated earlier, CCCI acts as an input variable when put into context with Extraversion and holds its own relationship with WTC, neglecting any significant interactive effect on WTC. However, this non-significant finding does not mean that there is no significant knowledge to be gained. Extraversion, as opposed to either of the other observed personality traits, holds more of an impact on behavior in both circumstances with low and high CCCI. In other words, a student in a poor communication climate who is high in Extraversion will rely on their Extraversion trait to determine their WTC in a similar manner as if they were in a great communication climate. Because Extraversion impacts WTC with a strong compulsion to communicate (Wilmot et al., 2019), it will be enough to incite high levels without the addition of CCCI.

Limitations

This experiment was largely based on correlational and self-report data meaning that its full potential is to provide foundations of relationships. It does not identify precisely whether a greater WTC influences distinct personality traits or vice versa. Nor does it speak to the directional relationship of CCCI (i.e. it could be that the level of CCCI is somehow dependent on complimentary personality traits). It does, however, mitigate this predicament by uncovering unique patterns and substantial data (N = 570) to solidify its claim. Regarding the structure of the survey, controlling responses was difficult, especially concerning open-ended questions. For example, when asked about their age, one participant responded “sophomore”. To mitigate these responses, questions to check attention and discriminate robot responses were included.

Ideally, the participants for a research project on communication climate in the *classroom* would be focused on students, but due to unforeseeable obstacles³ the sample population needed to be liberally redirected. In the demographic section, multiple questions were drafted in order to control for the increase in variance of the participants. For example, the number of years since people had attended their last level of school was measured in order to control for time out of the classroom environment (Appendix I). Another limitation regarding measures, is that for personality to be a truly intrinsic measure, it ought to be measured over a long period of time and then averaged out (Soldz & Vaillant, 1999). This study used a one-time measure of personality and while it measures the same characteristics, there is no definitive way to control for variance in individual subject experience or environmental affect at the time of survey completion. These are influences that may alter a reliable measure of personality. This uncertainty is mitigated by the volume of participants and the effectiveness of the measure as developed by Donnellan, et al. (2006).

Theoretical Implications

This type of research provides, importantly, a basis on which to study the benefits and faults of in-person and distance learning. In today's climate, questions of how student's learn best are advancing towards a different platform in which technology is viewed as having either a largely negative or positive impacts on education. While this research may not explicitly deal with issues of technology or distance learning, it elaborates constructs that would likely serve useful in such debates. Measures like communication climate and willingness to communicate ought to be increasingly utilized in research pertaining to both fronts before complete adoption of either side is pursued.

³ The COVID-19 outbreak caused great difficulty in obtaining participants and caused the initial direction of this project to change towards online data collection.

The data uncovered in this project may also apply towards research on Extraversion. If it is, indeed, not a trait impacted by the levels of CCCI, then students higher in Extraversion will contribute more during class. At the very least, high levels of willingness to communicate with others tends to entail high levels of actual communication. Perhaps the fascination with Extraversion as a useful skill or praised trait is explained by its resiliency in any environment. If efforts are made towards bettering the climate, it seems individuals higher in other traits may gain equal ground.

In addition to Extraversion, understanding the broad implications of this study may help to support different theories regarding attention and environmental appraisal. If personality and other intrinsic mechanistic traits hold greater impact when people detract their attention on their environment, then perhaps some sort of environmental appraisal plays a necessary role in inciting a reflection into the self. With a negative classroom climate, perhaps it is the recognition of awkward silences after the instructor asks a question brought about by one's lethargic classmates that motivates response. In the positive classroom climate, there is no need to continue focusing on the environment to determine how to behave or what to say and so the attention is directed inward. Students may acknowledge their peers as conducive to comfortable, open classroom discussion and then rely more on their own willingness to communicate independent of the environment. More research is needed to determine whether such a theory condoning *appraisal of comfort* is merited. Perhaps other negative environmental appraisals cause one to focus on internal traits. The interplay of perception (CCCI) and cognition (WTC/Personality traits) is difficult to tease apart, but future expansions of this study may reach this goal.

Practical Implications

On that note, the number of current students in either undergraduate or graduate school was rather significant ($N = 375$). Thus, this research addresses how important it is to foster a college classroom climate conducive to open communication and comfort. According to the data, this must not focus solely on the relationship between the professor and students, but between the students as peers. In understanding and developing such a climate, the will to communicate is most impacted by the student's intrinsic personality traits. In other words, the control or development of CCCI will leave students on equal footing when engaging in classroom discourse. It will also attenuate some of the negative impacts of certain personality traits on willingness to communicate such that all students will feel a propensity and desire to contribute to classroom discourse.

This piece of research is foundational in that it lays the framework for further research to be built upon it. The next step is to apply this data to actual classrooms and run longitudinal analyses of personality and CCCI on students. In classrooms, both WTC and actual communication could be measured and compared to understand more practical influences of both personality and CCCI. In addition, to understand how these features influence learning, measures of cognitive understanding of the material could be taken and compared to the professor's expectations. The necessity of comparisons between external and internal influences on behavior and cognition exists at the heart of psychology. In understanding the distinction between a student's appraisal of their environment and the structure or tendency of their appraisal-making mechanisms, a holistic understanding of students in the classroom can be formed. From that, student opportunity can be fostered, and critical thought manifested to forge a brighter future.

References:

- Allen, J.L., Long, K.M., O'Mara, J., & Judd, B.B. (2007). Students' Predispositions and Orientations Toward Communication and Perceptions of Instructor Reciprocity and Learning. *Communication Education*, 57(1), 20-40.
- Bernardin, H.J., & Smith, P.C. (1981). A Clarification of Some Issues Regarding the Development and Use of Behaviorally Anchored Rating Scales (BARS). *Journal of Applied Psychology*, 66(4), 458-463.
- Booth, J.E., Schinka, J.A., Brown, L.M., Mortimer, J.A., & Borenstein, A.R. (2004). Five-Factor Personality Dimensions, Mood States, and Cognitive Performance in Older Adults. *Journal of Clinical and Experimental Neuropsychology*, 5, 676-683.
- Bowman, N.A. (2010). College Diversity Experiences and Cognitive Development: A Meta Analysis. *Review of Educational Research*, 80(1), 4-33.
- Cao, Y., & Philp, J. (2006). Interactional Context and Willingness to Communicate: A Comparison of Behavior in Whole Class, Group, and Dyadic Interaction. *System*, 34 (4), 480-493.
- Chapman, L., & Ludlow, L. (2010). Can Downsizing College Class Sizes Augment Student Outcomes? An Investigation of the Effects of Class Size on Student Learning. *The Journal of General Education*, 59(2), 105-123.
- Costa, JR., P.T., McCrae, R.R. (2008). The Revised NEO Personality Inventory (NEO-PI-R). ResearchGate. DOI: 10.4135/9781849200479.n9
- Crede, M., Roch, S.G., & Kieszczynka, U.M. (2010). Class Attendance in College: A Meta Analytic Review of the Relationship of Class Attendance with Grades and Student Characteristics. *Review of Educational Research*, 80(2), 272-295.

- Dallimore, E.J., Hertenstein, J.H., & Platt, M.B. (2004). Classroom Participation and Discussion Effectiveness: Student-Generated Strategies. *Communication Education, 53*(1).
- DeYoung, C.G. (2014). Openness/Intellect: A Dimension of Personality Reflecting Cognitive Exploration. *APA Handbook of Personality and Social Psychology: Personality Processes and Individual Differences, 4*, 369-399.
- Donnellan, M.B., Oswald, F.L., Baird, B.M., & Lucas, R.E. (2006). The Mini-IPIP Scales: Tiny yet-Effective Measures of the Big Five Factors of Personality. *Psychological Assessment, 18*(2), 192-203.
- Dwyer, K.K., Bingham, S.G., Carlson, R.E., Prisbell, M., Cruz, A.M., & Fus, D.A. (2004). Communication and Connectedness in the Classroom: Development of the Connected Classroom Climate Inventory. *Communication Research Reports, 21*(3), 264-272.
- Faust, D.F., & Courtenay, B.C. (2002). Interaction in the Intergenerational Freshman Class: What Matters. *Educational Gerontology, 28*, 401-422.
- Feyter, T.D., Caers, R., Vigna, C., & Berings, D. (2012). Unraveling the Impact of the Big Five Personality Traits on Academic Performance: The Moderating and Mediating Effects of Self-Efficacy and Academic Motivation. *Learning and Individual Differences, 22*, 439-448.
- Greenberger, E., Lessard, J., Chen, C., & Farruggia, S.P. (2008). Self-Entitled College Students: Contributions of Personality, Parenting, and Motivational Factors. *Journal of Youth and Adolescence, 37*, 1193-1204.
- Hayes, A.F. (2018). Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach (2nd Ed). *New York: The Guilford Press*.
- Hill, C.A. (2011). Instructor-Initiated Questions and Student Participation in College Classroom

Discussion. DISSERTATION

McCrae, R.R., & Costa, Jr., P.T. (1999). The Five-Factor Theory of Personality. *Theoretical Perspectives II*, 159-181.

McCroskey, J.C. (1992). Reliability and Validity of the Willingness to Communicate Scale. *Communication Quarterly*, 40(1), 16-25.

Medina, M.N., & Srivastava, S. (2016). The Role of Extraversion and Communication Methods on an Individual's Satisfaction with the Team. *Journal of Organizational Psychology*, 16(1).

Milem, J.F. (2003). The Educational Benefits of Diversity: Evidence from Multiple Sectors. *Compelling Interest: Examining the Evidence on Racial Dynamics in Higher Education*, 126-169.

Perkins, A.M., Arnone, D., Smallwood, J., Mobbs, D. (2015). Thinking too Much: Self Generated Thought as the Engine of Neuroticism. *Trends in Cognitive Sciences*, 19, (9), 492-498.

Robison, M.K., Gath, K.I., & Unsworth, N. (2017). The Neurotic Wandering Mind: An Individual Differences Investigation of Neuroticism, Mind-Wandering, and Executive Control. *The Quarterly Journal of Experimental Psychology*, 70(4), 649-663.

Schrodt, P. (2003). Students' Appraisals of Instructors as a Function of Students' Perceptions of Instructors' Aggressive Communication. *Communication Education*, 52(2), 106-121.

Schwaba, T., Luhmann, M., Denissen, J.J.A., Chung, J.M., Bleidorn, W. (2017). Openness to Experience and Culture-Openness Transactions Across the Lifespan. *Journal of Personality and Social Psychology*.

Sims, C.M. (2016). Do the Big-Five Personality Traits Predict Empathetic Listening and

- Assertive Communication? *International Journal of Listening*, 31(3), 163-188.
- Soldz, S., & Vaillant, G.E. (1999). The Big Five Personality Traits and the Life Course: A 45 Year Longitudinal Study. *Journal of Research in Personality*, 33, 208-232.
- Stuart, W.D., and Rosenfeld, L.B. (1994). Instructional and Applied Contexts: Student Perceptions of Teacher Humor and Classroom Climate. *Communication Research Reports*, 11(1), 87-97.
- Sharma, S. (2015). Promoting Risk Taking in Mathematics Classrooms: The Importance of Creating a Safe Learning Environment. *The Mathematics Enthusiast*, 12(1,2,&3), 290-306.
- Solinger, C. (2015). Critical Thinking in the Visual Arts Classroom: A Phenomenological Participatory Action Research Study. DISSERTATION
- Taylor, J.F. (2002). Facilitating Difficult Discussions: Processing the September 11 Attacks in Undergraduate Classrooms. *Analyses of Social Issues and Public Policy*, 143-150.
- Tippin, G.K., Lafreniere, K.D., & Page, S. (2012). Student Perception of Academic Grading: Personality, Academic Orientation, and Effort. *Active Learning in Higher Education*, 13(1), 51-61.
- Topi, H., Valacich, J.S., & Rao, M.T. (2002) The Effects of Personality and Media Differences on the Performance of Dyads Addressing a Cognitive Conflict Task. *Small Group Research*, 33, 667-701.
- Vede, A., Thomsen, D.K., & Larsen, L. (2015). Personality, Academic Majors, and Performance: Revealing Complex Patterns. *Personality and Individual Differences*, 85, 69-76.
- Wilmot, M.P., Wanberg, C.R., Kammeyer-Mueller, J.D., & Ones, D.S. (2019). Extraversion Advantages at Work: A Quantitative Review and Synthesis of the Meta-Analytic

Evidence. *Journal of Applied Psychology*. Doi: <http://dx.doi.org/10.1037/apl0000415>

Appendix I

Survey Intro

Dear Student,

This is a research project observing how a student's environment affects their classroom behavior. This study is being completed as part of an undergraduate thesis project and holds the sole scientific purpose of advancing knowledge in the field of psychology.

Participation:

This is a non-invasive observational study, but at any time during this assessment, you can stop and end the test for any reason. There are no costs for participating in the study, and it will have no impact on your status in the class or at your school. The survey will take approximately 10 to 15 minutes and will include a small personal background portion.

Confidentiality:

This survey will discard any recorded personal identifiers immediately after the completion of data analyses. After discarding this data, no one will know whether or not you participated in the study. The information collected may not benefit you directly, but the information learned in this study should provide more general benefits. Refer to, the principal investigator at xxxxxxxxxxx if you have any questions or concerns.

Thank you!

Thank you for considering this study! I hope you have good luck with all of your future academic pursuits. If you would like to continue, click the 'Next' icon on the bottom right of the screen. If you would like to abstain from this project, thank you anyway.

Survey Questions

A: Demographics

1. What is your age?
2. What is your gender?
3. What is the highest degree or level of school you have completed?
 - High School Graduate, diploma, or the equivalent (GED)
 - Some college credit, no degree
 - Trade, technical, or vocational training
 - Associate Degree
 - Bachelor's Degree
 - Master's Degree
 - Professional Degree
 - Doctorate Degree

4. Are you currently enrolled in school?

If no:

5. How many years has it been since you completed your highest level of school?

If yes:

6. What level of schooling are you in right now?

7. What is your current GPA?

8. What year of college are you in?

9. Please answer this math question: $12 - 8 = \underline{\hspace{1cm}}$ ⁴

B. WTC

Please indicate how likely you are to communicate in each of the following situations (5 Pt. Likert Scale).

1. Volunteer an answer when the teacher asks a question in class.
2. Talk in a large meeting of friends (about 10 people).
3. Talk to your teacher after class.
4. Ask a question in class
5. Talk in a small group of strangers (about 5 people).
6. Talk in a large meeting of acquaintances (about 10 people).
7. Present your own opinions in class.
8. Talk in a small group of acquaintances (about 5 people).
9. Participate in group discussions in class.
10. Help others answer a question.
11. Talk in a small group of friends (about 5 people).

⁴ This open-ended math question was included to discriminate bots from data analysis.

12. Speak in public to a group of acquaintances (about 30 people).

C. Mini-IPIP

Indicate how much you agree with the following statements (5 pt. Likert Scale).

1. I am the life of the party.
2. I sympathize with others' feelings.
3. I get chores done right away.
4. Mark this question as 'Somewhat agree'.⁵
5. I have frequent mood swings.
6. I have a vivid imagination
7. I don't talk a lot.
8. I am not interested in other people's problems
9. I often forget to put things back in their proper place.
10. I am relaxed most of the time.
11. I am not interested in abstract ideas.
12. I talk to a lot of different people at parties.
13. I feel others' emotions.
14. I like order.
15. I get upset easily.
16. I have difficulty understanding abstract ideas.
17. I keep in the background.
18. I am not really interested in others.
19. I make a mess of things.

⁵ This question was included in order to test for attention and discriminate bots from data analysis.

20. I seldom feel blue.

21. I do not have a good imagination.

D. CCCI

For this section, please answer the questions while thinking about a class you are currently enrolled in.

Indicate the degree to which you agree with the following statements.

1. I feel a sense of security in my class.
2. I have common ground with my classmates.
3. I feel a strong bond with my classmates.
4. The students in my class share stories and experiences with one another.
5. The students in my class are friendly with one another.
6. The students in my class respect one another.
7. I feel included in class discussions.
8. The students in my class are courteous with one another.
9. The students in my class praise one another.
10. The students in my class are concerned about one another.
11. The students in my class smile at one another.
12. The students in my class engage in small talk with one another.
13. The students in my class are non-judgmental with one another.
14. The students in my class laugh with one another.
15. The students in my class are supportive of one another.
16. The students in my class show interest in what one another is saying.
17. The students in my class cooperate with one another.

18. Mark this question as 'Somewhat disagree'.⁶

19. The students in my class feel comfortable with one another.

⁶ This question was included to test for attention and discriminate bots from data analysis.